

Exhibit 12

COLORADO SCHOOL OF MINES RESEARCH INSTITUTE
P.O. Box 112
GOLDEN, COLORADO 80401

April 14, 1971

CSMRI Project No. 200534

Mr. Robert Russell
Johnson & Johnson
Research Division
New Brunswick, NJ 08901

Dear Mr. Russell:

As requested in your letter of April 1, 1971 to Mr. Robert C. Merritt, x-ray diffraction and microscopic analyses have been completed on the two Vermont final product samples. In your letter you stated Sample A (CSMRI No. 15) was produced using the delaminator and that Sample B (CSMRI No. 16) was produced without using the delaminator.

SUMMARY AND CONCLUSIONS

X-ray diffraction and microscopic studies showed the samples differ in some respects. X-ray diffraction studies indicated a trace of tremolite-actinolite in CSMRI Sample 16; no tremolite-actinolite was noted in the x-ray diffractogram of CSMRI Sample 15.

Microscopic studies of the two samples indicated:

1. Sample 16 (undelaminated) was slightly finer grained than Sample 15, possibly due to preferential liberation during the delamination process followed by preferential flotation of large talc plates.
2. Both samples contained some needle-like particles whose refractive indices were above the refractive index of the 1.600 oil used. These particles were tentatively identified as tremolite-actinolite. Sample 16 (undelaminated) contained a noticeably larger amount of these particles than did Sample 15 (delaminated). Again, this effect is possibly due to preferential floatability of large talc plates as opposed to reground tremolite-actinolite needles.
3. The platy content of Sample 15 (delaminated) was slightly higher than the platy content of Sample 16 (undelaminated).



Mr. Robert Russell

Page 2

April 14, 1971

4. The fibrous content of Sample 16 (undelaminated) was slightly higher than the fibrous content of Sample 15 (delaminated).
5. Overall, Sample 16 (undelaminated) looked as if it had been ground more than Sample 15 (delaminated).

RESULTS AND DISCUSSION

The results of the x-ray diffraction study are shown in Figure 1. As may be noted from the tracings of the diffractograms, the mineralogical composition of both samples is essentially the same. The only difference noted was the trace amount of tremolite-actinolite in Sample 15 (delaminated).

Microscopic analyses of the as-received samples yielded the following results (all values are visual estimates):

CSMRI Sample No.	Platy %	Foliated %	Fibrous %	F. G. A. %	CO ₃ %	Dark Opaque %	Tremolite- Actinolite %	mm			
								>0.1	0.1-0.05	0.05-0.01	<0.01
15	95	3	2	<1	tr	>1	tr	<1	50	40	10
16	92	3	4	<1	tr	>1	1	<1	40	40	20

Photomicrographs of these two samples are shown in Figure 2.

The microscopic study indicated Sample 16 (undelaminated) was slightly finer grind than Sample 15, contained a slightly smaller percentage of platy material than Sample 15, and contained a slightly larger amount of fibrous material than did Sample 15. Some needle-like particles were noted in both samples; Sample 16 contained a noticeably larger amount of these needles. These needle-like particles had refractive indices above that of the refractive index of the immersion oil used (1.600). They were tentatively identified as tremolite-actinolite. The x-ray diffraction study tended to substantiate this identification.

Mr. Robert Russell

Page 3

April 14, 1971

Two anomalies are notable among the foregoing results. These anomalies are:

1. The production of a relatively coarse-grained product from feed that has been processed through the delaminator - a process that is known to result in some size reduction.
2. The appearance of a significantly larger amount of liberated tremolite-actinolite in the undelaminated product.

Several explanations are possible for the first anomaly.

- a. The possibility that the delaminator is producing a relatively large quantity of thin talc plates from a relatively few talc books. These books of plates would have appeared as single plates before delamination.
- b. The inherent higher floatability of large plates as opposed to fines.

The second anomaly can also be explained by the inherent floatability of large plates and fibers as opposed to fines. Preliminary (unreported) studies of unbeneficiated ore taken before and after the delaminator indicate that the delaminator significantly grinds fibers to very small size.

Should you have any further questions regarding these samples, please feel free to contact us.

Sincerely,

Robert C. Beers

Robert C. Beers
Project Engineer
Metallurgical Division

AND

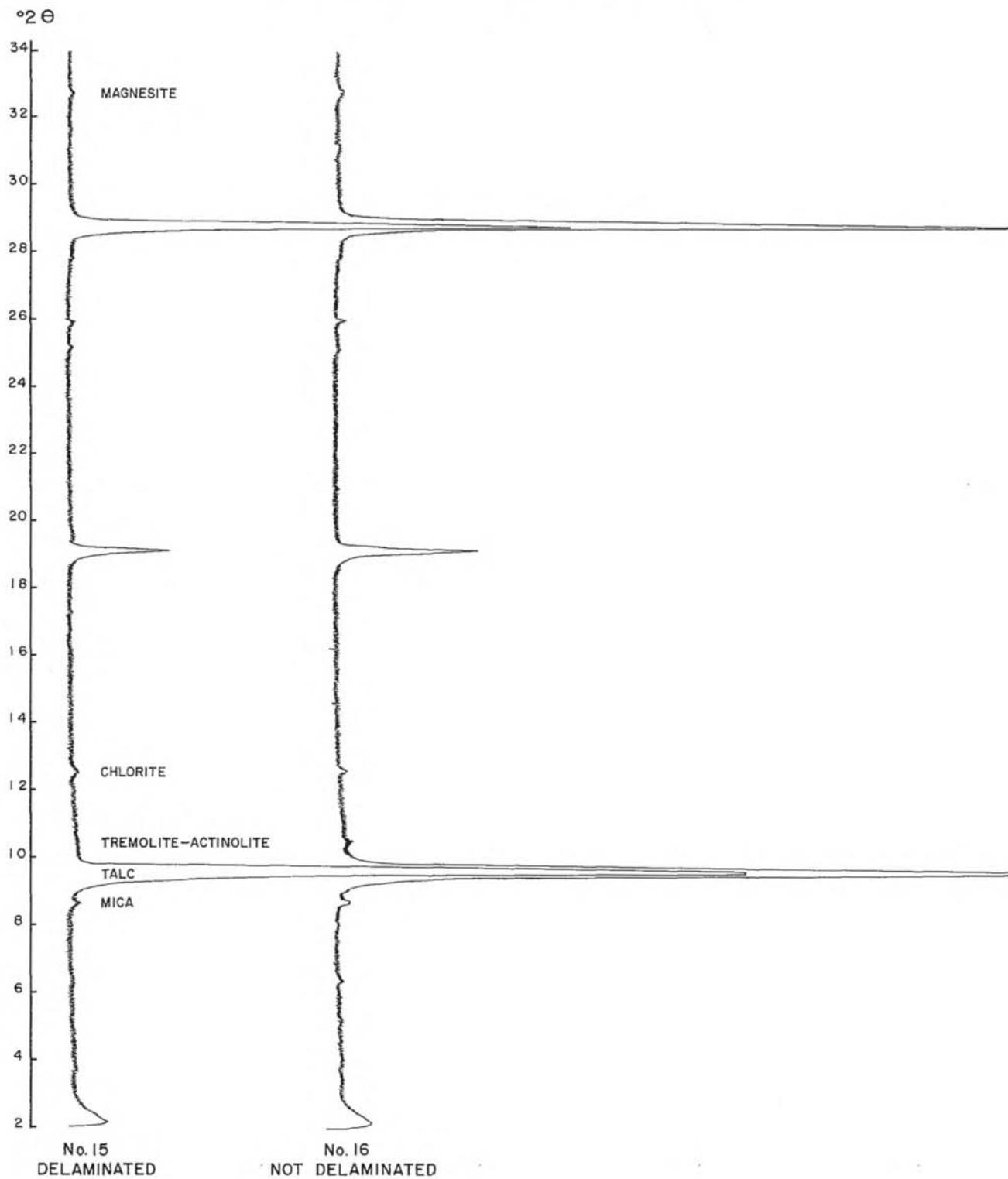
M. G. Pattengill

M. G. Pattengill
Project Engineer
Mining Division

/arh
encs

FIGURE I

X-RAY DIFFRACTOGRAMS OF TWO SAMPLES OF VERMONT TALC
(Cu RADIATION, Ni FILTER, 2%MIN., SCALE FACTOR 1×10^4)





Sample 15, produced using the delaminator.



Sample 16, produced not using the delaminator.

Scale
0.1 mm

Figure 2. Photomicrographs of two Vermont talc samples.